

RTTY

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EXCLUSIVELY AMATEUR RADIOTELETYPE



W8JLN, JIM

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AUTO-START MESSAGE COUNTER

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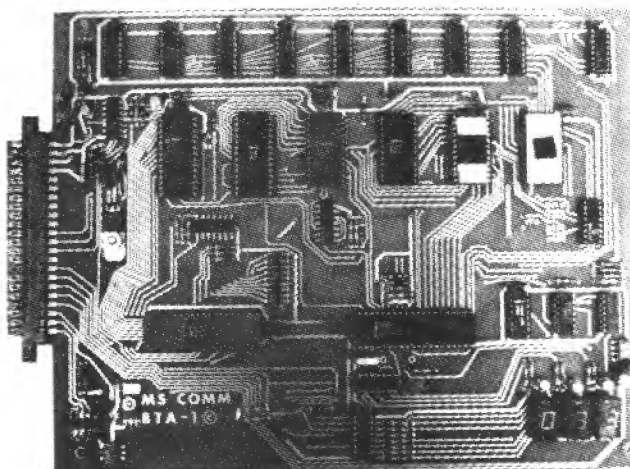
COMPUTERIZED RTTY

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The BTA-1 accepts FSK voltage level input available from most amateur terminal units and interfaces either 20 or 60 mA RTTY loops. The BTA-RTTY control unit is available in kit form with quality 8" x 11" PC board and complete instructions. A fully assembled and tested unit is also available. Power requirements are +5, +12 and -12 Volts.

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about the BTA-1 and other microprocessor amateur products.**

Ms Comm

—THE COMPUTER CONTROL PEOPLE

Box 225 Greenfield NH 03047

Certainly one of the more popular and prevalent rigs heard on RTTY in recent years is the Kenwood TS-520 series. A number of articles have already appeared in the RTTY JOURNAL concerning putting this fine rig on RTTY. (Ref. 1, 2 & 3). Reference 1 concerns use with the CW filter in the CW mode and presumably FSK. The 2nd reference gives a vague description on how to modify the unit for AFSK operation with the CW filter. The 3rd reference describes a method for FSK-ing the TS-520 and using the CW filter, and makes note that this is the "right" way to put the TS520 on RTTY.

I do not intend to get too deep into the merits of FSK vs. AFSK as the "right" way to put a SSB transceiver on RTTY. Certainly there are pitfalls to be avoided in using the AFSK tones method. The AFSK tone generator has to be of a type designed specifically for HF SSB equipment applications and there are presently many suitable designs available including the AK-1, AK-2, XK-2 and others. Care must be taken that the mike audio stages are not overdriven in the SSB transmitter and that the hum and noise be eliminated. And it goes without saying that an RTTY signal derived by the AFSK tones method be thoroughly tested by listening with another receiver for hum and other "glitches" before using on the air. AFSK is a thoroughly legitimate method for generating RTTY in a SSB transmitter or transceiver and there are a good many "clean" signals on the bands that use this method. The military has been using this system for over 20 years with good results.

References: (1) RTTY JOURNAL, March 1976, WA2FSD, (2) RTTY JOURNAL, April 1976, WA9WGX, (3) RTTY JOURNAL, April 1979, N5TM.

Enough said on that subject. The purpose of this article is to provide detailed information on the use of the TS-520 series on AFSK using the CW filter. A few comments will be provided on the general suitability of the TS-520 for RTTY operation. The method is based on the suggestions provided by reference 2, but contains "blow-by-blow" steps on how to do it. No holes are required.

First, it is assumed that you have installed the CW filter in accordance with the manufacturer's instructions. It is also necessary to have access to a frequency counter to do the job right. One with a response up to 10 Mhz is adequate and it should have an accurate time base of course.

Now we are ready to start. Remove the top and bottom covers of the transceiver. First measure the frequency of the carrier oscillator in LSB mode. This is most easily done at the "CAR" phono jack on the rear panel of the unit. Make a note of the exact frequency.

On my particular unit, which is the TS-520S, the DPDT "RF ATT" push button is used to switch from normal to RTTY operation. The older TS-520 does not have the RF attenuator P.B. but uses that switch for WWV/JJY. In my case, I sacrificed the RF attenuator so that I would have front panel switching from normal to RTTY mode. For those who do not wish to use the front panel push button, a DPDT switch can be installed on the rear panel in a convenient location as suggested by WA9WGX in his article. Another alternative is the use of a DPDT miniature can type relay which could be controlled by the "FIX CH" switch. There are any number of ways to provide the DPDT switching required. If you use the RF attenuator push button, be sure to record the original wiring in case you wish to put the unit back in the original configuration at a later date. Connect the two coax cables associated with the attenuator switch together. Remove the 56 and 470 ohm resistors. We will assume that you will be using the RF attenuator push button, as far as this description is concerned. The left side switch contacts, as viewed from this bottom/front, will be used for shifting the carrier oscillator, and the right side contacts will be used for switching filters. Make a short jumper from the left rear contact to the nearby ground tab. Locate the LSB trimmer (TC-3) on the carrier unit board (X50-0009-01). This will be the trimmer tab that faces the front of the TS-520S. This can be done from the top side of the

board provided that a small, PC type soldering iron is used and you are careful. You do not have to remove the board. Run the other end of this wire to the left side center of the P.B. switch. At this point, if you again measure the LSB carrier frequency, with the push button "out", you will find that it is slightly low due to the added capacitance of the wire. Reset the frequency to the original measurement after the wire has been threaded into the wire bundle in its final position. This completes the carrier shift portion of the modification.

Remove the ORA-WHI wire that goes to the "SSB" post located between the two filters on the I.F. unit board (X48-1060-01). Tape off the end of that wire and secure out of the way. Just to the right of the "RF ATT" P.B. will be the multi-deck "MODE" switch. On the second deck from the front you will find a terminal with two ORA colored wires attached. This will be the source of the +14V used to switch filters. Run a wire from this point to the right side, center contacts of the "RF ATT" P.B. to the "SSB" post on the I.F. unit board. Run a wire from the right side, rear terminal of the "RF ATT" P.B. to the "CW" post on the I.F. unit board. The brown wire already attached to this post is left undisturbed.

This completes the modification. Now when the "RF ATT" P.B. is pushed in, the carrier oscillator is shifted an appropriate amount and the CW filter is selected even when the "MODE" switch is in USB or LSB. With the P.B. "out", the transceiver works exactly as original, with filter selection slaved to the "MODE" switch, and carrier oscillator frequency at the proper point on the SSB filter scope. The frequencies measured on the LSB mode in my particular unit are: (Normal) 3393.432 KHz, (RTTY) 3392.637 KHz. A response check on receive, checked at the 3 dB points, showed that the RTTY tones did not fit precisely in the center of the 500Hz filter response. However, a response check over the range of 2100 to 2300 Hz indicated a variation of less than 1dB. Subsequent checks on transmit indica-

CONTINUED

ted that there was no change in output between mark and space tones and some 85 QSO's indicated very satisfactory performance.

A few words are in order about use of the TS-520 series on RTTY, some of which may apply to other transceivers as well. In setting up the unit on transmit, a patch cord was made up to interface between the microphone connector and the AFSK output of the demodulator. The mike gain was set at 12 o'clock and the output of the AFSK generator advanced until just below saturated output of the transmitter, as measured with a Bird wattmeter. Short of having a spectrum analyser available, extensive checks were made with the transceiver on dummy load, listening on another receiver and later on-the-air checks. No problems of any kind were noted.

Probably the most often asked question concerning operation of SSB rigs on RTTY is; "How much power can be run?" The TS-520S manual makes some comments about SSB operation, which is a relatively high duty cycle mode, but no mention of RTTY. This is not unusual and if you ask the manufacturer, he will likely recommend about half CW power. You can't always tell by the ratings of the final tubes because sometimes the power transformer is the limiting factor. The TS-520s is the fourth rig I have used on RTTY. In every case I have used full CW rating with no problems to speak of. But with a new rig, you always still wonder and it is best to work up the power levels in stages and watch carefully for any problems. In the case of the TS-520S, I inadvertently missed the chance to work up to it slowly. In making early tests, I mistakenly left the transmitter keyed, at 225 MA. for 45 minutes!! After wiping away the tears, I put the unit back on dummy load and checked output. Still 80W and the case was only slightly warm! But to top that, I heard later of a fellow who did much the same thing with an 820S which has virtually the same transmit section, for six hours! Now I certainly do not recommend this kind of abuse but it certainly lays to rest any fears or questions on how much power can be used.

In the earlier article by WA9WGX it was suggested that the switch be placed in the "Speaker" jack hole on the rear panel. I recommend leaving the speaker jack intact for its original use. If you do not wish to use the "RF ATT" P.B., I would suggest making a small panel to replace the DC module panel cover or install the switch in the original cover. Most demodulators require a 600 ohm input impedance. My demodulator has the 8/600 ohm transformer built in. But I also have a speaker that has a transformer built and terminals for 600 output plus provision for switching the speaker off and onto a dummy load, but with audio still available at the 600 ohm output. Some users of the TS-520's are of the assumption that when a headphone is plugged into the front panel jack, the speaker jack on the rear panel jack is cut out. This is not entirely true. The "PHONE" jack on the front panel has two holding positions; all the way in does cut out the external speaker, but the first detent position provides audio in both the headphones and at the rear speaker jack. This provides maximum flexibility for using the transceiver for RTTY.

The TS-520 series are excellent transceivers for use on RTTY operation in the transceive mode is particularly nice for contest work in my opinion, and the RIT takes care of the few stations that don't come back to you exactly zero beat. My only complaint concerning this rig is that the receiver has poor dynamic range but that is another story. I'll be glad to answer individual questions if an SASE is provided.

The pleasure of your company is requested to honor former editor of the RTTY Journal, Dusty Dunn, W8CQ on his 60th year as a Ham (also Dusty's birthday), on Saturday, March 22, 1980.

A banquet will be held at the Stephenson Club, Clawson, Michigan. Tickets are \$12.50 per person to be sent to: Charles Master, Box 294, Clawson, Michigan 48017, prior to March 12, 1980. Cash bar at 6:30, Dinner at 7:30 P.M.

"THE \$75.00 KIT!"

Review of "MEG-1" Terminal Unit.....
by W8OQCD, Mike Stone

I would like to shed some light on a very good and reliable RTTY terminal system which has been offered by the manufacturer via "The JOURNAL" and other publications, but has not yet been nationally recognized. It is called the "MEG-1" TU, short for the name of the manufacturer. At first, the name makes one wonder if this is a fly-by-night outfit, but after two years of observing their products and personal knowledge of the company representatives, it is indeed reputable. The name of Midnight Engineers came about because most of the staff work after midnight as they have daytime jobs.

It was decided long ago to make a RTTY demodulator that would offer reliable performance and optional features and yet remain competitive and economical. Let's examine the terminal itself:

The system is available in kit or fully assembled form. The basic kit consists of the demodulator package, mother interface board, switchboard and power supply kit package. The kit comes with the necessary hardware, switches, edge connectors and parts, and takes from 12 to 18 hours to assemble. Optional components are an "AFSK" board kit (Flesher FS-1), auto start package and automatic CW identifier kits with power supplies. You supply the case, although the company stocks "Dosey" all steel "F" series containers that can be predrilled for those who do not happen to have a drill press in the shack. Cabinet mounting hardware such as RCA phono and 1/2 inch jacks, female connectors, all electrical parts including the AC line cord are supplied in the basic kit. The finished kit offers: 170 and 850 shifts, FSK and AFSK outputs, CW ID circuit, pretuned torroid demodulator circuits, selectable and adjustable autostart, adjustable internal 0-100 Mil printer loop supply (170 V DC APP.) large easy to read signal tuning and loop reading meter indicator, scope output, signal receive or STBY circuit and mark and hold (non-space run open) circuit.

HITS & MISSES

George Hammon WA6CQW
14215 Pecan Park Lane SP 73
El Cajon, CA 92021

FROM
THE
MAILBAG



TRS-80 NET

The TRS-80 computer net is headed by WA6YKH, 14721 Candeda, Tusten, CA 92680 USA. The net meets as follows:
SUNDAY 1900Z 14342KHZ SSB WA6YKH
SUNDAY 2200Z 14342KHZ SSB WD8JAJ
DAILY 2300Z 14060KHZ CW VE6AMW
DAILY 2300Z 14075KHZ RTTY WB6VOG
WEEKENDS 0000Z 7,145KHZ CW WD8AS
WEEKENDS 1700Z 14085KHZ RTTY WA4AJY
Thanks to WIARC newsletter for info.

WARC

It appears Amateur Radio came away from Geneva with a fair shake. I was not pleased to see the lowering of the Morse code requirement from 144 to below 30 MHZ. The new bands 30, 17, 12 along with 902-928MHZ sound great. The 902-928 MHZ will be shared and it looks to me to be a dumping ground for the citizen band mess. The wording "primary basis" and "amateur service secondary" may be a clue.

The proposal to eliminate the code requirement pressed by FCC and forcing our WARC proposal to include this was typical of the lack of input recognition.

FCC

In the past, the lack of recognizing public comments and totally ignoring the Amateur service to do it their way is not right. Let's look at the record: incentive licensing, amplifiers, CW ID for RTTY, CB mess, new call signs and now the attempt to do away with the code license requirement. The lack of reality shown by the aforementioned items is clear and is by no means a complete list or the end of it. Recently it was announced that local FCC officials will not be allowed to give FCC exams at conventions, this was to cut down on total government travel. Lack of reality and concern for Amateur Radio Service I say. I took the Amateur advanced exam at a Ham convention and if the dedication of local FCC officials could only reflect to those in Washington. Perhaps the need to completely reorganize and to make it more responsive to the needs of the public

would not still be needed.

Now we wait with concern and anticipation for ASCII. I think most remember in 1977, the former FCC bureau chief announced at a public forum that Amateurs would be allowed to use ASCII by January 1, 1978. We now are back to square one, January 1, 1980 with the same carrot dangling in front of our nose. The inability for the Amateurs around the world to get their act together and be ready for ASCII is painfully apparent in the letters I receive. One randomly selected quotes as follows: "Dear George, Do you have any standard for Ham Radio application of ASCII code operation?...Baud rate in HF?...Shift? 170 same as Baudot?...The list goes on and the typical interest to press on with ASCII and be ready. To paraphrase, the FCC fiddles while ASCII burns.

ASCII

Lets look at the problem and what is the bottom line. I feel first a set aside area for ASCII should be established not the taking away of the Baudot portion. This area then should be only for ASCII. I believe data transmission rate rather than to occupied bandwidth be the controlling factor, now it is clear why it is necessary to set aside an ASCII area. I have tried to get data on bandwidth versus baud rate with results nil. The equipment needed to measure occupied bandwidth is completely out of the financial range of the Amateur so hence letting the baud rate be the controlling factor. What Baud rate?? I feel on the Hf bands 110 will be the standard. The shift will bring new headaches, with 110 baud and ASCII being a 7 bit code we are now handling 40% more character bits to print while the error rate increases more than 40%. I believe the shift will have to be 1000 HZ. Hank Scharfe (owner of Dovetron) pointed out, that by going to 850 shift, turning off the limiter, the results will still be poor.

The question of parity should not be established, but most feel they could live with even parity.

I have tried to express my opinion and is in no way to be the only way to go. Next month I will discuss the VHF bands and ASCII.

I will close out my column this month and many thanks for all of your letters. I am Behind in my correspondence so be patient.

So long for now....George..... Publishers note: George lost his mother this past month. Our sympathy goes out to George and his family.....

"The \$75.00 Kit!" continued

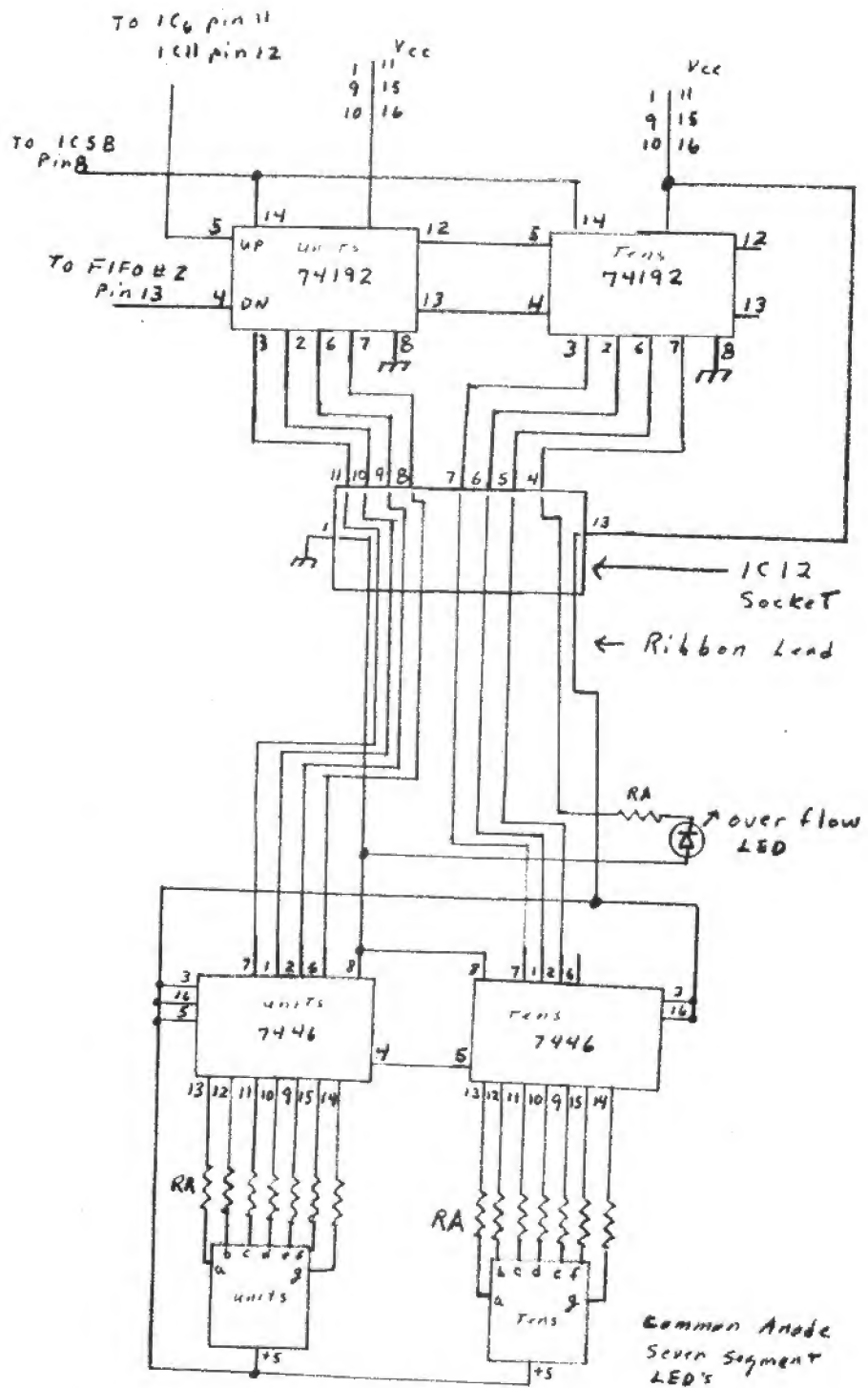
How does it perform? Well, speaking for the midwest area, there are over 50 of these units on line and I have never heard of any unusual breakdowns or serious malfunctions. Those who have had high voltage keying transistors or other parts go out have got very fast service from the manufacturer. Great for VHF and HF communications, it is recommended, to ensure maximum reliability, that a separate RTTY filter of some type be used ahead of the AF input as on any basic IU. "Fleshers PS-1 or Nat Stinnette's active bandpass filter, will make a definite improvement in receiving QRMed RTTY signals.

With ASCII mode just around the corner and the popularity of RTTY communications again on the upswing, this kit or assembled unit offers to the user a unique and reliable terminal system at an affordable price. The MEG-1 demodulator is warranted for one year on all components.

For price list and/or more information write: The Midnight Engineering Group, P.O. Box 349, Galesburg, Illinois 61401..

A DIGITAL READOUT FOR THE UT-4 BY SKIP PRINSEN, WB6CYA

The attached diagram shows a simple digital readout for a UT-4. IC's 9 and 10 (74193) are replaced with 74192's and all the parts for IC 12 (MC 1408L-6) may be removed. This circuit will give exact FIFO content up to 79, with overflow indication.*1. The 7446 IC's and seven segment readouts are built on a separate board and attached to the UT-4 via ribbon lead and a standard 16 pin IC plug. After removal of the parts associated with IC 12, place a jumper between IC 10 Pin 7 and IC 12 socket pin 4. Resistors RA are chosen for desired readout brightness, 330 OHM resistors work well. * Note 1. Some versions of the UT-4 have an nand gate between IC 10 and IC58 pin 13 which will automatically clear the counters on the 80 count, thus negating an LED overflow indication.



RTTY-DX

SKIP PRINSEN WB6CYA

3611 Merrimac, San Diego, Calif. 92117

714-276-3182



Greetings to all.....

With the onset of bad weather more of the old-timers are reappearing on the bands. 10 and 15 meters are still turning up new countries for those that take the time to check these frequencies out from time to time.

I have been taking a computer course from NTS, a home study course that is very good for one that is interested and has a limited background in electronics. A part of this course is building a Heathkit* H-8 and H-19 microprocessor system. As a result I have been monitoring 14.0825 mark frequency and will be on unattended autostart on this frequency from 0700 to 1800 PST(PDT) daily. I hope to have a WRU on in the very near future. I usually am in the shack evenings from 1530 local California time. I'll have more on my WRU operation in next months issue.

Last week-end I had a very nice eyeball QSO with Ed Bruns, W3EKT who was in San Diego on company business. I am looking forward to seeing him again when he returns. I would like very much hearing from anyone that will be coming to San Diego.

On the operating scene, I finally snagged a Utah station, N7KM for the elusive 50th state and am now patiently awaiting his QSL card.

On the international front I have worked OX3FG, 9G1JX and C6ACA for new countries this month. Other countries and stations reported active recently are: LU7DDG, YU2AAX, TI2ALE, OD5JW, CN8BB, GM4EAF, GM4FZH, GM3DJT, KL7T, KL7K, ZS6AEC, CP6EE, OS0TIU, LA5JS, LA5IV, HP1XUL, XE10E, FC2CJ, 5N0SID, 4U1TTU, EA8RG, 5N0DOG.

Larry, K1LPS writes that he has printed several stations on RTTY from

California on SIX METERS!!! he was not set up for transmit at the time. Makes me miss not living in a channel 2 fringe area.

3B8RS, 3B9RS is now back in DL land. QSL to Walter, DJ6QT.

C6ACA, Barry Packington, St. Andrews School, Box N7546 Nassau, Bahama, Isl.

EA6HY, Gabriel, LaPuebla, Bop Isla de Mallorca (Spain).

Others printed: XT2AZ QSL via VE2DFR/VE2ATS. 5Z4RT QSL via I8JN. OX3FG, Walther, Box 177, Julianhaabe, Greenland 3920. TI2MY, TI2CAH, TI2AEB, FP8DF, OY1A, 4Z4KB, DM3BBM/4X Qsl via 4x4 Buro. TU-2HH Alain PO Box 1347, Abidjan, Ivory Coast, TU2JE. 5N9GD. Joe, Kaduna, Nigeria. 9H1EH, 9H79ET, CT1KB, CT1AHZ, ZS2LR, and ZS1RO have been worked thru the ZE1CE repeater on 14.075Mhz.

I received a nice note from Paulian YO3BEJ, QSL Paulian Nicoara-Lix, STR. Dr Lister, SA, R-76208 Bucuresti Romania. He writes that he is using homebrew video display and was the first YO on RTTY on 5 May 1978.

GOOD DXING AND CU ON THE BANDS. 73 de Skip.

AWARDS

DXCC endorsement for 160 countries goes to, K7BV "Mac" McGinley, 4091 W. Redwing St. Tucson, AZ 85704.

DXCC endorsement for 130 countries goes to W8JIN, Jim Ringland, 4514 Glenridge Dr., Cincinnati, OH 45245.

WAC all on 14MHZ Nr. 80.

WAC all on 21 MHZ Nr.16

WAC all on 28MHZ Nr.9.all dated 23 De 79 go to DJ30E, Herbert Merry, Saturnweg 18, 4056 Schwalatal2, West Germany

WAC all on 14MHZ Nr.79 to Erick Pra-watschke, Gaustrasse 51, D6530 Bingen (Rhein) RFA West Germany, dated 15-12. 1979.

SECTION

KONTEST KORNER

rules

Giant Flash 19-20 January 80..Oct 79. (North & South America.

Giant Flash 9-10 March 80..Oct 79. (Europe & Africa)

BARTG March 80.....Feb 80

***** May 80..... coming.

VK/ZL/Oceania-16-17 June 80...coming.

SARTG August 80.....coming.

CARTG October 80.....coming.

B.A.R.T.G. SPRING RTTY CONTEST

RULES

When-022 GMT Saturday 22 March until 0200 GMT 24 March 1980. The total contest period is 48 hours but not more than 30 hours of operation is permitted. Time spent listening count as operating time. The 18 hour non-operating period can be taken at any time during the contest but off periods may not be less than 3 hours at a time. Times on the air must be summarised on the Summary sheet.

WHO- There will be separate categories for Single Operators, Multi Operators and Short Wave Listeners.

Bands-3.5, 7.0, 14.0, 21.0 and 28.0 MHZ amateur bands.

STATIONS- Stations may not be contacted more than once on any one band but additional contacts may be made with the station if a different band is used.

COUNTRIES- The ARRL COUNTRIES LIST will be used and in addition each W/K VE/VO and VK call area will be counted as a separate country. Note: W/K, VE/VO and VK count once only for QCA purposes.

MESSAGES- Messages exchanged will consist of:(a) Time GMT. This must consist of a full four figure group and the use of the expression "Same" or "Same as yours" will not be acceptable. (b) RST and Message number. The message number must consist of a three figure group starting with 001 for the first contact made.

POINTS- Points can be claimed as follows: (a) All two-way RTTY contacts with stations within one's own country will earn TWO points. (b) All two way RTTY contacts with stations outside one's own country will earn TEN points. (c) All stations will receive

.....
GUIDELINES IN BUILDING A VHF RTTY REPEATER BY WB0QCD. MIKE STONE.....

In going back over many years of "JOURNAL" issues and articles, I quickly realized that a basic article on the assembly and operation of a VHF RTTY repeater had never been published. Many very sophisticated "F2" re-laying stations are in use today and the principles behind such a project are long from new. With that in mind, and perhaps to give some helpful hints and guidelines to those who are new to RTTY or would like to generate some local interest by means of a teletype repeater, the following information is submitted.

Perhaps the first concern of the interested group would be of frequency establishment. For many years, since authorization of amateur radioteletype in 1953, 146.700 Mhz. has long remained the understood agreement for radioteleprinter (F2) emission within the two meter bandplan. Today, however, you will most likely find in the local area established voice FM repeaters on this segment either due to community crowdedness or poor Repeater-Council control within your state. If you are lucky enough to have 146.10/70 pair open in your area grab it! Notify your existing state-repeater council of your intentions and request their endorsement and support. Twenty-eight out of sixty known RTTY repeaters on VHF use the 146.10/70 or 223.10/224.70 Mhz. combination while others are forced to use the so called non-standard teletype repeater channels. (*1) Whatever the frequency, choose one with care considering other nearby repeaters and repeater bandplan recommendations.

The next big battle always becomes "Should we have a teletype-only repeater or one with dual voice-RTTY capability?" Obviously, it should be the decision of the supporting group. Smaller groups tend to desire to also use their RTTY repeater for phone work during the day hours. A few repeaters will even go as far as to establish time sharing periods for voice and RTTY operation. From personal experience, I recommend that a RTTY repeater be solely for teletype communications and be un-accessable by carrier keying. Most areas have other popular repeaters that will take care of the needs for voice and mobile operation. For the elaborate, articles have been printed on ways of being able to use both phone and teletype communications on the same repeater simultaneously. (**2) For the purpose of this article, we shall assume that the desire is for a RTTY-only repeater.

The choice of the repeater apparatus itself must be carefully considered. Transistorized state-of-the-art repeater designs may not be able to handle the full key down time that often occurs during RTTY conversations and artwork. Older tube lines such as Motorola or GE Prog line series serve as excellent industrial-grade repeater stations with rugged hardware and reliable high power output for full key-down. Time out circuits must be disconnected or eliminated as used in phone repeaters. Possible rewiring of transmitter power supply circuits for reduced voltage draw may be necessary or recommended. A teletype repeater will, on a per hour basis, receive more use in its lifetime than several

FM phone repeaters. Therefore, the choice of a reliable and rugged commercial type of apparatus is a must for many hours of uninterrupted and satisfying enjoyment.

Now we come to the heart of the system. The controlling demodulator-terminal system when interfaced properly, will provide RTTY-only recognized access with a number of optional desired features. ST5 or ST6 series type systems (HAL) will provide more than adequate RTTY regeneration and output filtering. Much less expensive designs lacking features needed for HF operation will also provide exceptional performance. Interfaced terminal systems are much better than using no terminal system at all with simple reproduction of the signals as the weaker ones will be also outputted weakly. TU interface provides signal regeneration, uniform user output levels, corrected tone alignment and other wanted features determined by the options installed. Resistors and capacitors will normally have to be changed to shorten or lengthen turn on and turn off times. The TU's "autostart" circuit becomes the COR (carrier operated relay) as used in other repeaters. FCC requirements are presently no longer than 5 second cessation after input signal withdrawal. Present requirements for identification are at ten minute intervals since the authorization of repeater stations under primary licenses. (***)

There are many add-on features that will "dress-up" the VHF teletype repeater. One of the first that must be considered is UART regeneration. UART circuits are relatively inexpensive and easy to install into the terminal unit. W9IF, Richard Parrys' November 1978 article in 73 Mag details the performance and availability of such a circuit. Many UART articles have been published through the years, one of the best being Irv Hoff's UART series in the RTTY JOURNAL (****) UART basically regenerates and cleans up any distortion bias that is present on the inputting signal and outputs it into the demodulator circuit for "clean" dissection of the different code level bits of information. This assures all receiving stations excellent reproduction copy regardless of the inputting stations type of signal.

Next in line for consideration of options is crystal-controlled AFSK output on the repeater. Many mark/space tone circuits have been published that will provide stable outputted tones to all stations regardless of off frequency operation by the inputting station. It also becomes a known standard for user alignment.

Some repeater systems will incorporate other features such as "input release tail-end character print identification such as K9WRU's MS-5 IDer circuit which can be programmed with the repeaters call or club identification. Bandpass filters may be installed to reduce outside interfering to the demodulator thereby eliminating false keyups or interference. SELCAL/WRU circuits may be interfaced to provide user callup of Club Bulletin board information or Circuit test tapes.

Although 170 hz. shift and 60 WPM speed operation seems to be the most popular these days on VHF circuits, for-

continued on page 10

CONTEST CONTINUED

a BONUS of 200 points for each country worked including their own. Note that any one country may be counted again if worked on a different band but continents are counted once only. NOTE: Proff of contact will be required in cases where the station worked does not appear in any other contest log received or the station worked does not send in a check log. SCORING--(a) Two-way contact points times total of countries worked. (b) Total country points times 200 times number of continents worked. (c) Add (a) and (b) together to obtain the final score. Sample score:

Exchange points (302) X	
Countries (10)	3020.
Country points (10) X 200 X	
continents (3)	6000.
(a) + (b) to give score of	9020.

LOGS AND SCORE SHEETS- Use a separate sheet for each band and indicate all times on the air. Logs to contain: Date, Time GMT, callsign of station worked, RST and message number sent, Time RST and number received and points claimed. Note: Logs from Short Wave Listeners MUST contain both the full report sent and received by the station logged. Incomplete loggings are not eligible for scoring. The summary sheet should show the full scoring, times ON the air and in case of multi operator stations, the names and callsigns of all operators involved with the operation of station. SUMMARY AND LOG SHEETS- are available from the contest manager as follows: In the United Kingdom on receipt of a large stamped addressed envelope. All other countries require 2 IRC's to cover cost of postage.

ALL LOGS MUST BE RECEIVED BY MAY 31st 1980 IN ORDER TO QUALIFY. Send your contest or check log to: Ted Double, G8CDW, 89 Linden Gardens, Enfield, Middlesex, England EN1 4DX.

The Judge's decision will be final and no correspondence can be entered into in respect of incorrect or late entries and all logs will remain the property of the British Amateur Radio Teleprinter Group.

Certificates will be awarded to the leading stations in each of the three classes, the top station on

each continent and each W/K, VE/VO, and VK call area.

ADDITIONAL NOTES- If a contestant manages to contact 25 or more different countries on two-way RTTY during the contest, a claim may be made for the QUARTER CENTURY AWARD (QSA) issued by BARTG and for which a charge of 3 Dollars US or 15 IRC's is made. Make your claim at the same time as you send in your log. Holders of existing QCA awards will automatically have any new countries added to their records. However, in view of the high volume of work which the contest manager will have to deal with, it will not be possible to prepare and send out new awards or update existing awards until the final results of the contest have been evaluated and dispatched.

Similarly, if any contestant manages to contact stations on two-way RTTY within each of the six continents and the BARTG contest manager has received a contest or check log from each of the six operators concerned, a claim may be made for the WAC award issued by the RTTY JOURNAL. The necessary information will be sent on to the RTTY JOURNAL who will issue the WAC award free of charge (SASE).

Specialty Communications Achievement Award. Sponsored by 73 Magazine. Eligibility for this award consists of -all contacts must be made on or after January 1, 1980 on RTTY, SSTV or via EME(moonbounce) or Oscar satellite.

Class A requires two-way contact with stations in all 50 US states. Class A1 requires minimum of ten DX Countries worked.

Application should be made by submitting a list containing date, time, band and mode of each contact. Class A should be arranged in order by state, Class A1 are requested in Callsign prefix. A signed declaration of type of equipment/antenna should be included. Have your contacts verified by two other amateurs. Enclose award fee of \$3.00 to Bill Gosney, 2665 N. 1250 East, Whidbey Isle, WA 98277. USA.

Guidelines continued

merly used 850 shift and 100 wpm operation might gain once again in popularity with the coming of ASCII RTTY operation. Dual-level converters will soon appear on VHF RTTY repeater circuits for the allowance of both 5 and 8 level code inputs.

Repeater CW Identification must be experimented with on obtaining correct audio tone output so not to interfere with ongoing printed data by the user station. A tone frequency different than that of the 2125 mark and 2295 space (170 shift) will have to be used for both audible and understood identification.

It is assumed that the reader understands the operation of repeaters in general and all that goes with a properly run FM VHF repeater station such as Duplexers or split-siting, choice locations etc. Together with a correct type of RTTY-interfaced control regenerating system, a VHF RTTY repeater will enhance many hours of shared enjoyment by its users as well as provide the amateur community with a high degree of specialized mode of communication.

Further information may be obtained from any of the below listed VHF RTTY organizations:

CARRS c/o L. Schulman, 1014 Dell Road, Northbrook, IL 60062.

BSTS c/o Dave Johansen, 1027 W. Lombard, Davenport, IA 52804.

DARTS c/o KOOST, 6359 S. Fenton Ct., Littleton, Colorado.

SCATS, c/o D. Sinner, 9085 Lacasita Ave., Fountain Valley, CA 92708.

*(1) ARRL FM repeater directory.

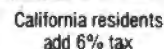
** (2) Compatible RTTY QST, Dec, 79 pg31

*** (3) Part 97.84 FCC rules and regs.

**** (4) Available from WBOESF \$2.00.

FROM THE PUBLISHER, DEE CRUMPTON-GOHEEN

My step-son Jay (JOHN P.) Goheen is currently aboard the aircraft carrier USS FORRESTAL he would like Amateurs in the Rome, Naples, Venice area to contact him. He is the technical rep for General Dynamics in the aircraft intermediate maintenance dept. on board the Forrestal. Look for the FORRESTAL in the Mediterranean Sea. Thanks amateurs.....





RTTY Journal

VHF

RTTY NEWS



Mike Stone, WBØQCD

P.O. Box H, Lowden, Iowa 52255

My compliments to Dee, our publisher for doing a great job on the JOURNAL, especially the last few months. The new format and style of printing has greatly improved the magazines appeal as so many of you have already commented. For the money spent, The RTTY JOURNAL offers the specialized communicator a bundle of information and articles. Harry Danals, W2HD, president of ARRL promised me more articles in QST and apparently is keeping his word, as the December issue carried a fine article on "Compatible RTTY on VHF Repeaters". Additionally RTTY and other specialized communications will be back in the handbook. November and December issues of Popular Electronics have interesting articles on a "RTTY reader for short-wave receivers".

Hopefully, in April or by the Dayton Hamvention, I will have finished assembling the most complete composite of RTTY ARTICLE LISTINGS ever put together. I have listings of every article from: the JOURNAL, QST, 73 Magazine, Ham Radio and CQ Magazine. Putting it altogether is quite a job and will certainly be a "must have" by all RTTYers! Copies should be available at Dayton and this "master-listing" will be made part of the new updated RTTY Beginners Handbook published by the JOURNAL. If anyone has any other input please write me immediately.

Georne Hammon, WA6CQW our "Hits And Misses" editor commented in December of his concern for ASCII and BAUDOT being run in the same general area on HF bands. Let's hear your input on this matter so the JOURNAL can wisely represent our feelings to ARRL

who will undoubtedly have a part in suggesting operating guideline areas.

On the same matter, what are your feelings on wanting RTTY represented in the new WARC approved Ham bands in 10, 18 and 24 MHz? Other groups are already filing notices and recommendations and it won't take long for 100 KC segments to be gobbled up!

Winners of the "VHF" Holiday RTTY Art Contest will not be announced, as stated in the December column due to article submission-predate time periods. The December announcement mistakenly printed "HF" instead of "VHF" contest. Entries must have been verified as relayed on a VHF RTTY CIRCUIT.

From "FM RTTY" publication in Colorado comes word that K8BG, Buzz in Cleveland, Ohio is stirring up some two-meter VHF RTTY activity on 145.70 MHz. (simplex between the sub-bands). Buzz published his search for interested RTTYers in the local FM newsletter and got quick results. The "Virginia Teletype Society" reports their new 2-meter RTTY repeater is now on-the-air from Johnson's Mountain about 15 miles SW of Lynchburg. The repeater is located at the WSET-TV tower which is 574 feet tall! The 147.705/.105 machine is also located on 1328 feet of mountain. They run RTTY/voice from 6 A.M. to 7 P.M. and RTTY only 170hz. shift from 7 P.M. to 6 A.M. (from WB4BJJ Repeater Journal). "SCATS" RTTY Club held their elections in January. Their project of a 220 repeater nears completion with assembly of the duplexers.

A new ASCII/BAUDOT converter was presented by Cole Ellsworth at their November meeting. "CARRS" VHF RTTY

group have their computer now which will be interfaced into the "deluxe" two-meter RTTY repeater. "LINE-FEED" is their quarterly publication. Those in or near the Chicago area should contact "CARRS", 1549 N. Cicero, Chicago, IL 60651. A reminder that while in the Denver area you should access the "DARTS" RTTY repeater system WRO-ACX on Squaw Mt., west of Denver, (444.20 in and 449.20 out). 147.570 is used for 2-meter simplex RTTY. WBOCZI, Jim Fyles has been allocated 442.15/447.15 Mhz. for a new RTTY repeater from Adams County. SW and SE Denver possibly including Colorado Springs area is the expected coverage range. A lonely CQ-RTTY call is sent out each night near Bluffton, Indiana by Wayne Grove, K9SLQ on 2-meters with no answers. Does VHF RTTY really exist, asks Wayne? How about you Indiana RTTYers getting together with Wayne? Maybe when VHF DX is in Wayne, you can work into WR9ACU Indianapolis 146.28/88Mhz. which started in 1978. Jim Rinehart, WB9CEP reports that it takes both combinations of "mark" and "space" to bring the repeater up. They are using a DT-600 terminal, UT2 with crystal controlled AFSK at 60 WPM and 170 shift. The garble free IDer uses a 1600 hz. tone and is limited for RTTY until after 7 PM weekdays. They have 15 stations active, most on auto start operation. Jim reports that during Nov. 3-11th the club demonstrated "RTTY communications" thru the repeater using a Kenwood TS-700, Infotech model 200 and M300 keyboard along with a 19" RCA video monitor. (The 1979 figure Jim, was a printers error, I have been licensed since 1975). The Indiana group also experiments with 2-meter SSB RTTY. Anyone else running SSB VHF RTTY??

W4PPN, Howard Cochran writes that a group of RTTYers' in the Raleigh-Durham, North Carolina area want to put up a 2-meter VHF RTTY repeater. Inspired by Howard and checking back thru old JOURNALS, I found that no article on guidelines for a VHF-RTTY repeater had ever been printed. So in another part of this issue is such an article. Anyone able to offer additional help please write Howard at: 101 Eagle Court, Cary, NC 27511. Keith

continued on page 13

CONTINUED

Ryan in Ottawa, Canada has a nice simple time-delay circuit that is adjustable from 5 seconds to 2 minutes for the microprocessors world where logic pulses are used to control heavy AC or DC power equipment for a specific period. Write for a flyer via POB 3103,K1P 6H7 SASE please. Had a nice 15 meter RTTY contact with Dennis WB3KNJ in Drums, PA. He says that active VHF RTTY autostart is used on 147.51 simplex, 170 shift at 60 WPM. Some participants are: K3BS, K3UK, WA3UDI, WA3ZKH and WB3AVF.

Dee advises that the "credit-logo" washed out at the printers on the November cover of "peanuts". It should have been credited to the Chicago CARRS group (sorry fellows, great pic) From the desk of K5ZMS, Ray Clark, "SMIRK" (six meter international radio Klub comes word of their filed comments regarding FCC PR-Docker #79-285 (RM-3207) dealing with the FCC's intentions to open the entire 6 meter band to "wideband FM" encouraged by SCRRBA "southern California Repeater and Remote Base Association". The band is as large as the ten meter segment for use by all and approval of FM down in the actively used SSB portions would be a disaster to SSB users. Write your comments to FCC, Washington, DC 20554. Ray Clark will be glad to correspond with you write c/o 7158 Stone Fence, San Antonio, Texas.

Received a nice letter from Bill Karraker, W9AVE of the "Argonne Amateur Radio Club" in Illinois. Bill states that they distribute copies of the JOURNAL to all members and also monitor VHF RTTY, but as yet are not set up for transmission. They copy the W1AW RTTY bulletins regularly, WR4ARD RTTY repeater has a new callsign: WA4GIC/R and operates in the Winston-Salem, NC area on 223.1/224.7 Mhz. They use a "Clegg-FM-76" unit "split" with an "O.C. Stafford" electronic terminal system including band pass filtering. Nearly 20 stations use the system and has a range of about 40 miles. W4IRE, John Huffman advises not to skimp on your duplexers! Late word from the "British Amateur Radio Teleprinter Group" BARTG that a new contest manager has been appointed, his name is Chris Plummer,

G8APB, 148 Porter Road, Brighton Hill Basingstoke, Hants, England RG22 4JT. April looks like the time of year for a "VHF Europe" contest. WBOGUX, John Fellin reports of a neat modification to the Infotech M-70 ASCII/BAUDOT code and speed converter for clock-controlled output using a 555 chip. Circuit design available via Infotech St. Louis, MO for \$1.50.

I would like to close this months column with a belated "Best wishes for a Happy New Year" and as an old-time "ham" in Geneseo, Illinois always says; "STAY REGULAR!"

73's MIKE

LOOKING BACK

to

"TAPE OFF THE FLOOR"

WBOESF

R. Wilson, 4011 Clearview Drive, Cedar Falls, IA 50613

FROM FEBRUARY 1954 RTTY JOURNAL ...W6NAT de W6NYF. Hi Bill, this is the first time I was able to connect up with you- swell..

...W1BGW de W2JAV .. Roger and fine all the way Jack. Good evening to you ..Yes it has been some time since we worked. Well a lot of things have been happening-sometimes can't keep up with them..have been on quite a bit lately and find that conditions are screwed up-the skip has been in for some time and a lot of commercials have come in on the band-some right in the channel too-almost called one the other night thought he was a ham. Well Jack I did get the 26 and am using it now-and boy its a dream..so doggone smooth that I can't hear it run hardly. That is compared to the 12-I frankly think that it is quieter than the fifteen-sure think that you should by all means try to get one- Marv and I and Frank each got one-and the shipping was not too bad only cost me about fourteen dollars the whole way to my door. Just went right off. Boy forty has been a real mess- so before this gets messed up I'll shoot it back to you ole boy.....

...W6NAT de W6ORV, fine Bill, How about getting on 420 again sometime when we can work straight thru your 420 signals are R9 here...a very nice signal off that old surplus rig so back to you W6NAT de W6ORV.

...W6FXF de W6NAT. I had to copy you on the Model 12 Karl, for some reason the 26 was printing Greek on your signal and when I changed over to the 12 it was perfect copy...

Hi! Hi! That make-break is rough to copy. I was doing about 90 per cent with him Saturday night feeding space tone in locally Hi! That's a heck of a way to RTTY Hi! I told him to go FSK. No excuse for break-make- FCC gave us FSK! W2JAV de W3PYW. Silver Spring, Md.

NATS GLOSSARY (modified for RTTY by

WBOQCD Mike Stone....

AFSK- something which is illegal on HF bands but is okay to do.

Air Core- now known as the AIR FORCE. AMP-bug with six legs..

Arrestor- officer of the law.

Autostart-rotation of the ignition key..

Banana plug- plug used on leaky bananas....

Buffer- substitute for aspirin.

Buss-used for transporting amps.

Capacitor-one who can hold liquor.

Centimeter-long critter with many legs...

Chad-see chadless...

Chadless-see chad..

Choke-what your wife does to you when she sees your new rig..

Decibel-used to warn ships..

Detector-someone who works for the FBI..

Discriminator-member of KKK

Discriminator-one who will persist in washing white clothes alone..

Dodge-something we all hope to do..

Dummy load-a guy who carries his mother-in-law around..

Exciter-Rachel Weich going topless..

Farad- Egyptian ruler..

Feed thru- a slot in a jail cell.

Final output-taking the garbage out for the last time..

Flat topped-it's hard to get excited about this..

NOW YOU CAN HAVE BOTH

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- All in a convenient, small cabinet
(14.1" x 9.25" x 4.35")

Price: \$449.00

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USER'S REPORT-MACROTRONICS M-80 by RAY LaBELLE, W6RUL, 7076 ENDERS, SAN DIEGO, CA 92122

The computers age in Amateur Radio is here, with the passing of the proposal to use ASCII on Amateur Bands. For all you hams that want to have an all electronic system for RTTY and still have your computers for all the other great things around the shack, is the TRS 80 and M80 system.

I called Macrotronics for some information about the M-80 and after talking to Ron Lodewyck about some technical points I bought the M-80 kit. I assembled it in about three hours, using their manual. This kit is the finest one I have ever assembled as the parts and P.C. board were of excellent quality and the manual was without delay causing errors.

With the M-80 complete and checked out by the manual I put the program into the TRS-80. Much to my amazement the system came up and running the first time. I first tried

afew CW contacts and received very good reports on how good my fist was Hi Hi! so back to RTTY.

I did some experiments and found out that if you set the Morse code speed at 15.6 WPM the Ham you are in contact with prints all "M's" or depending upon which ever (fig or let) the machine is in instead of garble.

Some of the features of this system are: Morse send and receive 5-399 WPM, code practice of random words, letters and numbers stored in memory. 10 programable canned messages and 0 is used for automatic CW ID and transfer to receive, Transmit and receive RTTY at 60, 66 75 or 100 WPM, A choice of 32 or 64 characters per line.

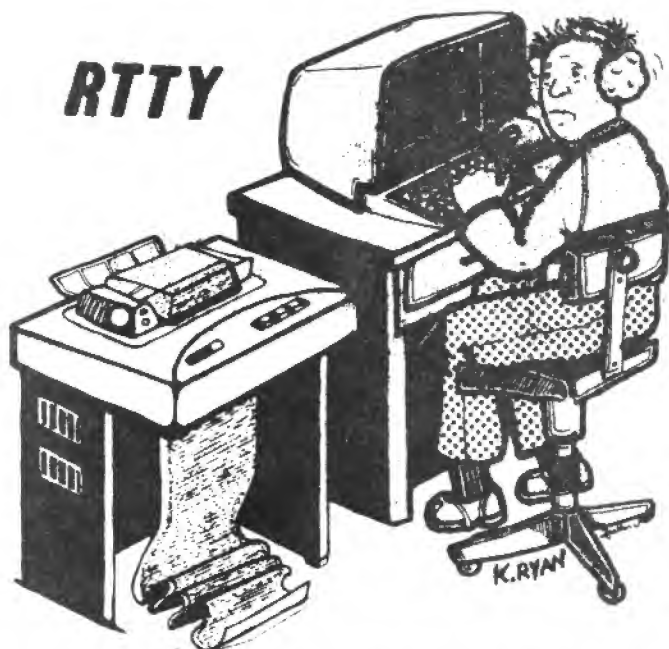
The Macrotronic M-80 Ham Interface is a very good piece of equipment, making your shack more useful with the combined use of this interface.

Happy DXing with your computer and enjoy.

THE FOLLOWING IS AN UP-DATED LISTING OF VHF/UHF RTTY CLUBS, GROUPS OR REPEATER ORGANIZATIONS. HELP US WITH ADDITIONS.

RTTY GROUP -EAST	COMPUTER CONTROLLED (C)	REPEATER	INFORMATION	AREA SERVED	FREQUENCY
AMRAD	C	WR4APC	W4RI	WASH D.C.	147.81/21
SO.CO.AR.ASSOC.		---	---	NEW HAVEN CT.	147.855/255
BALTIMORE ARTV SOCIETY		---	---	MARYLAND	147.63/03
INSURANCE CITY ARC		---	---	BURLINGTON, CT.	147.75/15
NCRATS		WR4ARD	K4BE	WINSTON-SALEM, NC	223.10/224.70
DWN RVR CTR GROUP		WR8ABN	K8AQC	DETROIT, MI.	146.22/82
MARC		K8CA/R	---	FLUSHING, MI	146.10/70
TU-BURO ARC	C	---	WA2MXB	WHITESTONE, NY	
LEXINGTON NTS		WR1AKJ	---	MASSACHUSETTS	223.10/224.70
VIRGINIA TELETYPERS		WB4JB/R	---	LYNCHBURG, VA	147.705/10
FLORIDA RTTY		WB4LLN/R	W4CF	ST. PETERSBURG, FL	144.55/145
GEORGIA TTY		WR4AXM	W4AV	COHUTTA, GA	146.46/7.0
NE KENTUCKY RTTYERS		WR4AKT	WB4FPK	GRAYSON, KY	146.10/70
CENTRAL PENNSYLVANIA RTTY GROUP		WR3ACO	WA3AUX	HARRISBURG, PA	147.975/375
JERSEY RTTY GROUP		WR2AJB	WB2PMF	BAYVILLE, NJ	448.35/443.35
METROPLEX ACA		K2KLN/R	WB2VUJ	FORT LEE, NJ	144.91/446.75
MIDWEST					
CHICAGO AREA RTTYERS	C	WB9ZHG/R	K9WRL	CHICAGO, ILLINOIS	144.71/145.3
AFSKERS		WROARE	KOTG	MINNEAPOLIS, MN	146.10/70
BI-STATE TELEPRINTERS SOCIETY		K9UQI/R	WB0FBP	QUAD CITIES	146.10/70
RADIO AMATEUR TELETYPE SOCIETY		WA0NDN/R	---	MINN/ST. PAUL, MN	146.10/70
PEORIA AREA RTTYERS		WA9LRO/R	WB9GYH	GRIDLEY, ILLINOIS	146.10/70
CENTRAL ILLINOIS RADIO CLUB		---	IRC	CHAMPAIGN, ILL	146.10/70
MISSISSIPPI RV REPEATER CLUB		---	W9HWQ	WITOKA, WISCONSIN	146.10/70
DALLAS ARC TEXAS	C	---	WB5PUC	DALLAS/FT. WORTH, TX	146.10/70
RCA ARC (CORP)		WR9ACU	WB9ERE	INDIANAPOLIS, IN	146.28/88
DES MOINES RTTY GROUP		---	---	DES MOINES, IOWA	146.10/70
NORTH CENTRAL ARKANSAS RTTY		---	WB5DZM	ARKANSAS	146.70
ST. LOUIS ATS		WROAJP	WB0GUX	ST. LOUIS, MO	146.10/70
MISSOURI RTTY		WROAHR	KOJPR	LEES SUMMIT	146.10/70
CINCINNATI RTTY		WR8AEA	W8HQQ	CINCINNATI, OHIO	146.69/09
OHIO RTTY		WR6ART	---	KIRKLAND, OHIO	146.10/70
TRI-COUNTY VHF RA		WR8ABJ	ORAC	NEWCOMERSTOWN	146.925/325
OKLAHOMA RTTY		WR5ASI	WA5TSJ	OKLAHOMA CITY, OK	146.10/70
TULSA DE		K5LAD/R	K5LAD	TULSA, OKLAHOMA	146.10/70
TRISTAT R.A.		W9LZQ/R	---	LACROSSE, WISCONSIN	147.72/12

RTTY



microcomputing

Radioteletype communications; commercial as well as Amateur have certainly continued to advance in the state-of-the-art over a period of many years. Radioteletype has come a long way since that cold December day in 1953 when the FCC announced formally the approval of a 5 level code for ITT by "Hams". The Baudot code has and will continue to provide reliable ITT communications during the best and worst band frequency propagation and QRM.

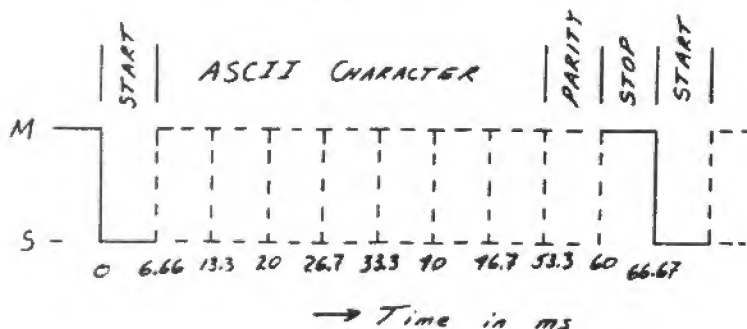
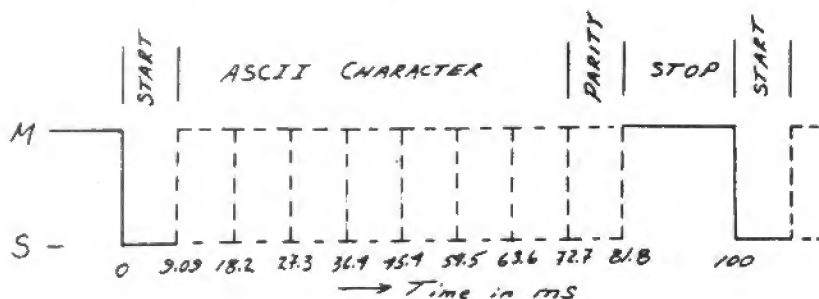
New to newcomers to RTTY is the ASCII (American Standard Code for Information Interchange) code. Briefly, ASCII consists of 7 information bits, thus permitting 2 to the 7th power or 128 unique characters without shifting. In addition it has an 8th bit which can be used to parity checking. Thus ASCII is called an 8 level code. Some ASCII code combinations are given here. Although not shown here, there is a character assigned to each of the 128 combinations. Characters with 00 in bit positions 6 and 7 are control functions. NUL is the equivalent of a Blank in the Baudot code. SOH stands for "Start Of Heading", EOT for "End Of Transmission", ACK for ACKnowledge. LF and CR have the same meaning in Baudot as does DEL which is DELETE or Letters shift in Baudot. Perhaps the most important feature of the ASCII code is that each character has its own code combination including upper and lower case letters. For example, in the Baudot code a "4" and an "R" share the same code combination and there is no lower case "r". For further reference see p 30-44 IT&T handbook or any computer-type magazine on the market. When used with ITT machines, additional bits are required. The following figures show the format used for 100 and 150 WPM operation. Each character is composed of a Start and Stop pulse, Mark and Space

in addition to the information bits.

There are today, many amateur radioteletype stations using ASCII printers or microcomputers on the RTTY band segments. Until final approval, all stations must make use of some sort of "converter" to change the 8 level input to a 5 level output.

It is not necessary to own a computer to use ASCII. As with Baudot machines, interface with loop supplies to a demodulator terminal unit on an 8 level printer will also do the trick. Several studies reveal the the 5 level code will perform more reliably in error free print capture than that of 8-level code reception under the same conditions during other than perfect frequency band and noise or QRM conditions. Thus, it would appear that ASCII is best suited for VHF or landline operation or under best of conditions on the HF circuits for maximum "hittless" exchanges of information. The majority of ASCII use will undoubtedly be used for "computer" program exchanges and language referrals.

So, does the average "ham" run right out and buy \$1,000 worth of computerizing equipment to keep up with the state-of-the-art ?? Of course not. Many will continue to use Baudot code at the standard 60 wpm and matching equipment. The Model 15's and 19's and quiet running 28's will still be in demand. (in fact, they will certainly be harder to find once the computerists desire "hard copy" output in printed form along with "video"). The answer to obtaining ASCII capability without spending your life-savings, is code and speed converters. Models such as Macrotronics M80 E800 or Infotechs M70 and others convert Baudot to ASCII and vice-versa as well as several wpm speed conversions some with buffer memory circuits. If you are lucky and work a station with one of these systems be sure to thank him or her for the nice converted qso.



RTTY JOURNAL

Additional Schematic Page 17

LISTING OF RTTY GROUPS ETC. CONTINUED

WEST

SAN DIEGO TELEPRINTERS SOCIETY
SCATS-LOS ANGELES
CENTRAL CALIFORNIA ATSOC.
AM COMM SOCIETY
UHF RTTY
KENNICK ARC
BLACK FOREST MTN.
PORTLAND RTTY SOCIETY
DENVER AREA ART SOCIETY
CHEYENNE MTN. ARC
CHEYENNE MTN ARC
BOISE AR RTTY SOCIETY
UARTS
SPOKANE RTTY GROUP
MARICOPA CRG
NEVADA RTTYERS

WB6CYA
W6IWO

WR6AYI

WROAGN
WR7AJL

WROAPP
WROAPP
WR7AIG
WR7AIG
WR7ASA
WR7ACC
WR7AIA

WB6CYA
W6IWO

W6XT

WAOUZO
W7WVG
K00ST
WBOOPR
WBOOPR

WA7YLP
K7VOR

MT. OTAY, CALIFORNIA 223.22/224.82
LOS ANGELES, CA 146.10/70
SAN JOAQUIN, CAL. 449.20/444.20
SAN FRANCISCO, CA 147.93/33
LAGUNA BEACH, CA 223.10/224.70
WASHINGTON STATE 147.78/18
AURORA, COLORADO 146.19/79
PORTLAND, OREGON 147.78/18
DENVER, COLORADO 442.2/449.2
COLORADO SPRINGS, CO 147.945/345
COLORADO SPRINGS, CO 449.20/444.20
BOISE, IDAHO 146.10/70
PT. OF THE MTN. 146.10/70
SPOKANE, WASH. 147.78/18
PHOENIX, ARIZONA 146.10/70
LAS VEGAS, NV 147.96/36

FOREIGN

BARTG
PYE TELEC. LIMITED
AUSTRALIAN NATIONAL SOCIETY
CANADIAN AR TTY GROUP
YUKON AR ASSOCIATION
BCTG
OTTAWA RTTY

G33PT

VE7RPT
VE3ARS

G8CDW
G8CDW

VE3RTT
VE8AO
VE7MQ

ENFIELD, ENGLAND
MIDDLESEX, ENG. 433.3/434.9
CROWS NEST NSW
ONTARIO, CANADA
WHITEHORSE, CANADA
VANCOUVER, BC 146.10/70
OTTAWA, CANADA 147.90/30

ANY UP-DATES, ADDITIONS OR CORRECTIONS PLEASE CONTACT THE JOURNAL THROUGH MIKE STONE, WBOQCD PLEASE.....

Partial list of USA Standard Code for Information
Interchange [ASCII, USAS x 3.4- 1967].

				b ₇ b ₆ b ₅				0	0	0	0	1	0	1	1	1	1
								0	0	1	0	1	0	1	0	1	1
b ₄	b ₃	b ₂	b ₁														
0	0	0	0					NUL				0	@	P		p	
0	0	0	1					SOH		!	1	A	Q	a	q		
0	0	1	0							"	2	B	R	b	r		
0	0	1	1							#	3	C	S	c	s		
0	1	0	0					EOT		\$	4	D	T	d	t		
0	1	0	1						NAK	%	5	E	U	e	u		
0	1	1	0					ACK		&	6	F	V	f	v		
0	1	1	1							'	7	G	W	g	w		
1	0	0	0							(8	H	X	h	x		
1	0	0	1)	9	I	Y	i	y		
1	0	1	0					LF		*	:	J	Z	j	z		
1	0	1	1							+	;	K		k			
1	1	0	0							,		L		l			
1	1	0	1					CR		-	=	M		m			
1	1	1	0							.		N		n			
1	1	1	1							?		O	-	o	DEL		

RTTY JOURNAL

Classified Ads

30 WORDS \$2.00. ADDITIONAL WORDS 4¢ EACH--CASH WITH COPY-DEADLINE 1ST OF MONTH

SELL, NEW FLESHER, UART, TR-128 factory built. Chuck, W6JOX, 401 Carrillo St., Santa Rosa, CA 95401 \$200.00.

WANTED: TELETYPEWRITER PARTS and assemblies for Teletype, Kleinschmidt and Mite Corporation machines. Phil, W4LNU, P.O. Box 70, Morrisonville, NY 12962.

RTTY! ST-5X TERMINAL UNIT-AFSK-power supply. WRU. RTTY scope and amplifier Boards and kits. Bomark, Inc., P.O. Box 7116 Hollywood, FL 33021, 305-962-7219

6800 MICROPROCESSOR OWNERS RTTY operating software for SWTPC or similar processors. Transmit Baudot or Morse and receive Baudot code. Written for on the air use-keyboard selection of pre-loaded messages or CW ID. Can also be used as buffered CW keyboard with keyboard speed control. For more info and price send brief description of your system to K9AR, 742 S. Vail Avenue, Arlington Heights, IL 60005.

NEWS-NEWS-NEWS-AMATEUR RADIO's News-paper "WORLD RADIO". Trial subscription Two issues for one dollar. "WORLD-RADIO" 2509-F Donner Way, Sacramento, California 95818.

TELETYPE MACHINES AND ALLIED EQUIPMENT. SASE FOR LIST. MODEL 28 THREE (3) SPEED RECEIVE ONLY \$250.00. Model 28 ASR, PERFS, REPERFS, TD'S, ROTR's, MODEMS TWX'S, TELEX'S ETC. ANTIQUE TELEGRAPH INSTRUMENTS. GOODMAN 5454 SOUTH SHORE DRIVE, CHICAGO, IL 60615. 312-753-8342.

MODEL 28 ASR WITH KEYBOARD Perf and TD \$350. For reperf instead of perf add \$50. Model 28 KSR \$175. For answerback add \$50. For 60-75-100 gearshift add \$100. Model 28 reperf with 60-75-100 gearshift \$150. For keyboard add \$50. Model 28 reperf with keyboard (no gearshift) \$150. Other goodies available, all equipment rewired and ready to plug in FOB Akron. Bill Parker, K8NCV, 984 Amelia Avenue, Akron, OH 44302.

THOUSANDS OF COMMERCIAL RTTY Stations are active between the Amateur short-wave bands. Many of them can be printed easily with your existing equipment. (Take care of legislative restrictions if applicable!) If interested, you need "software", compiled from nonstop monitoring the complete shortwave spectrum. I do have up-to-date frequency, call sign, schedule, code lists for press, military, diplo telex, aeronautical, weather, etc. stations. Write for details. Joerg Klingenfuss, PANORAMA STRASSE 81 D-7400 Tuebingen 7, Fed. Rep. Germany.

KEYBOARD-MICROLOG AKB-1 All RTTY speeds, plus CW with AFSK modulator, buffer and message memories \$399.00 Video Display-Microlog AVR-2 decodes all RTTY speeds plus ASCII and CW. Built-in dual tone demodulator, audio visual tuning indicators plus scope output. Direct hookup to receiver audio for perfect copy \$499. Printer/speed converter interface add \$75. Use your TV with RF modulator or our professional video monitors. 9 inch \$189 15 inch \$279. Brag Tape accessory may be used with any keyboard. Record your message on any cassette tape. Transmit recorded message at any time Only \$75 fully assembled and tested. 110 vac. AFSK demodulator. Hi/Lo tones, normal or invert. Audio in TTL out. Assembled and tested, 110 vac. only \$75. AFSK modulator. Factory set for 2125/2295 may be adjusted for other frequency pairs. Fully assembled and tested, 110 vac. only \$50. Computer PC board G10 double sided plated thru holes uses Motorola 6800 microprocessor with full description and diagrams \$10. Complete parts kit including M6800, M6821, M6810 (2) plus power supply. With complete assembly instructions and application notes \$39. Ask your favorite dealer or order directly from MICROLOG Corp., #4 Professional Drive, Suite 119, Gaithersburg, MD 20760. Visa/MC welcome.

KLEINSCHMIDT RE-PERF TT-107, Choice 60 or 100 words. Checked out and working \$39.95 add UPS-40 lbs. HARMON 5628 10th Ave. S. Birmingham, AL 35222.

Speed Converter. Also transceivers, amplifiers, antennas and other general ham radio equipment. Call 'Dick', KO-VKH, 605-343-6127 for special quotes on all of your equipment needs.

"RTTY AWARD HUNTERS" 73 MAGAZINE announces the most comprehensive awards program going! Over a dozen separate awards recognizing all bands and modes for DX and domestic achievements. Full details appear in the September, October and December 1979 issues or SASE to: Bill Gosney, WB7BFB, 2665 N. 1250 East, Oak Harbor, WA 98277.

TELETYPE SUPPLIES, TECHNICAL Manuals, equipment. 11/16" and 7/8" perforator tape. Page paper. New ribbons. Teletype Corp. maintenance manuals. Let me know what you need. Send 75¢ postage for the 3 current catalogs. Jim Cooper, W2JC/W2BVE, Box 73 Paramus, NJ 07652.

TELETYPEWRITER GEARS, PARTS, RIBBONS, tools, manuals, supplies, also toneroids. List SASE Typetronics, Box 8873 Ft. Lauderdale, FL 33310. Cash or trade for unused repair parts, components, klystrons, and military connectors.

TELETYPE EQUIPMENT AND SUPPLIES. Model 28 friction feed receive only \$125. Model 28 friction feed ASR \$350. Good Model 28 KSR/RO motors (LMU-3) \$15. Model 28 stand alone TD (LXD) \$100. New white paper (12 roll case) 4 1/2" diameter \$21; 5" diameter \$25. WANTED: 11/16 reperf tape. One only Model 19 complete \$100 (pick-up only). Packing charge for RO's and ASR's FOB Rochester, MI. Poul Andersen, 115 Boyken Rd. Rochester, MI 48063. 313-652-3060.

the exciting new INFO-TECH M-70 CODE/SPEED CONVERTER

The Info-Tech M-70 is a microprocessor based unidirectional simplex converter which will accept as an input: Loop, RS-232 or TTL signals at Baudot speeds of 60, 66, 75 or 100 wpm or ASCII speeds of 110 or 300 baud. The outputs of the M-70 are: Loop, RS 232 and TTL at Baudot speeds of 60, 66, 75 or 100 wpm or ASCII at 110 or 300 baud. With simple external switching, the M-70 can be operated half duplex in any mode/speed conversion combination.

A 1024-character buffer is provided for down-speed conversion, with buffer empty and buffer full status indicator outputs.

OTHER FEATURES:

- Auto-start output with two selectable formats: channel active, or space character detect
- Two programmable sel-cal (selective calling) outputs decode up to 7 characters each. (4 character turn off code)
- WRU output generated after detection of a string up to 7 characters long
- Selectable automatic C/R and L/F
- Selectable unshift on space (Baudot inputs only)
- Selectable bell defeat
- Selectable parity select (ASCII outputs only)
- Buffer Run/Load input

PRICE \$175.00 PCB ST. LOUIS.

The M-70 is a "Semi-Kit", including a completely assembled and tested printed circuit board with 22 pin, double side edge card connector, power transformer, complete schematic and operating information with several application examples. All that need be added are selecting switches, when options may want to be changed, indicating LED's, and a suitable cabinet or card rack position.

User Specified, Factory Programmed Options Include:

Selcal #1 = _____ Off = _____
Selcal #2 = _____ Off = _____
WRU = _____

Enter only one character per space, including non-printing characters, shown as follows (all spaces need not be filled in):

Figures = f Line Feed = L/F
Letters = l Blanks = BLK
Carriage Rtn = C/R Space = SPC
eg. Selcal #1 = W f l K E BLK Off = N N N N
Please use order form supplied.

see above

INFO-TECH

INCORPORATED
Specializing in Digital
Electronic Systems

2349 Weldon Parkway
St. Louis, Missouri 63141
(314) 576-5489

THE DOVETRON TBA-1000 BAUDOT-ASCII Code translator is designed to interface Baudot and ASCII circuits. I/O may be low level polar (EIA RS232C or MIL 188C) or high level neutral (active or passive). Parallel ASCII is also available. A preloadable 192 character buffer prevents character over-runs when down-converting baud rates. ASCII Control characters may be used to command peripheral equipment and functions. Features such as Unshift/Space, LTRS Only, Blank Diddle, Variable Character Rate, LED Memory Status Indicators and ID Inhibit are standard. Baudot speeds of 45, 50, 57 and 75 bauds are front panel selectable. ASCII baud rates of 110, 150, 300, 600, 1200, 2400, 4800, and 9600 bauds are internally selectable via a BCD coded DIP switch. All baud rates are crystal controlled and programming instructions are etched on the PC board. The 3.5" X 9.0" X 17.0" package is self-contained and available as a table top or rack mount unit. Power requirements are 115/230 VAC, 40-400 Hz, 10 watts. A bypass

option is available. Amateur Net: \$395 FOB. DOVETRON, 627 Fremont Avenue, South Pasadena, CA 91030.

SURPLUS TD PAPER YELLOW AND OILED..
11/16 carton of 10 \$3.00, Wt 13 lbs.
11/16 carton of 40 \$10.00, Wt 47 Lbs.
7/8 carton of 8 \$3.00 Wt. 13 lbs.
7/8 carton of 32 \$10.00, Wt 47 lbs.
Add UPS WT. HARMON, 5628 10th Ave., S. Birmingham, AL 35222.....
28 KSR RARE 3 SPEED GEARSHIFT, Communications keyboard all wired for loop \$300.00. HAL ST6 TU with UART (switchable in/out of line & 60 and 100 WPM) and AK-1 AFSK. Optional XTK-100 crystal controlled AFSK board. \$300.00
RTTY FSK/AFSK CW IDer with timer, all assembled in Dosey "E" cabinet \$50. Delivery within 200 miles, W80QCD, Lowden, Iowa. 319-944-5421.....
HAL DS-3000 KSR version II, Like new, ST-6, with built-in scope, Dovetron CW ID, AK1, single frequency auto-start solid state receiver all in one package \$900. John Fail, KL7GRF/6, 6170 Downey Ave., Long Beach, CA 90805. 213-531-4852. You pay shipping, prefer pick-up. Spare parts included....

RTTY-SOLID STATE CQer board with PROM programmed your call. Coming soon. Send name and address for future announcements. Nat Stinnette Electronics, Tavares, Florida 32778.....
MODEL 33 RO'S LESS STAND AS IS. USED/
checked on line prior to shipment \$250. total, shipped Prepaid, anywhere in continental USA. With stand \$265. W/RS 232 installed \$300. while they last. Please specify 20 or 60 MA service. All units checked for major (visible) wear. Model 33 manuals \$20 per set volume 1, 2 and parts. Paper \$30 per case of 12 rolls. Ribbons \$17. per box one dozen. Please send certified check or money order. Many supplies and various terminals as is and rebuilt. Parts are also available. Please write or call for lists. Tom Harriott TRAM TELETYPEWRITER SERVICE 58 East Elm St., Central Islip, NY. 11722, (516) 582-9787.....

FOR SALE: MOD 35KSR EXCELLENT CONDITION. Pick-up only. \$400.00. 714-276-3182, Skip, 3611 Merrimac Ave., San Diego, CA 92117.

Pete Bertelli, W6KS, advises that he will soon discontinue his project of providing components for the UT-4 which he started in 1975. He will quit when present stock is exhausted. FOR SALE: RTTY DEMODULATOR, designed especially for the reception of short wave RTTY signals with various types of speeds and shifts. The PPL circuit is adapted automatically to the shift of the station received! Printing usual stations like press, military, amateur, diplo, weather, aeronautical telex, maritime, etc., is rather easy with this LED-controlled unit. Features: switchable audio filter; auto-start relay; power supply 220 V AC 50 Hz; outputs: loop supply for mechanical RTTY machine, and/or TTL-compatible for VDU. Price, including packing and surface mail postage to anywhere in the world, DM 420.00 or \$240.00. Some more information is airmailed to you for DM 5.00 or \$3.00, this amount is credited on the final price of the unit if you ordered later on. Joerg Klingenfuss, Panoramastrasse 81, Hagelloch, D-7400 Tuebingen 7, W. Germany

FOR SALE: 4th edition of the "LIST OF RTTY STATIONS IN FREQUENCY ORDER", now contains more than 2800 frequencies of commercial stations like press, aeronautical, weather, telex, military, diplo, maritime, etc. on shortwave. Schedules of around 100 news agency stations are also included. This offset printed list is airmailed to you for \$15.00 or 39 IRC from Joerg Klingenfuss, Panoramastrasse 81, Hagelloch, D-7400 Tuebingen 7, West Germany.

FOR SALE: 3rd edition of the "LIST OF SPECIAL RTTY AND CW ALPHABETS AND CODES", now contains code tables for Arabic, Cyrillic, Hebrew, third shift Cyrillic, Greek, Korean, Amharic, and Thai 5-units CCITT3, and SITOR codes. Detailed descriptions of the "decoding" of Arabic and Cyrillic transmissions received on a normal machine and of ARQ/SITOR/FEC error protection systems are included. Arabic, Cyrillic, Greek, Hebrew, and Japanese Morse codes are also listed. This offset printed list is airmailed to you

SELL: HAL RVD 1005 WITH MANUALS like new. Price open. Have DS2000 KSR now. Harry Shaw, N6CG RDF Bolinas, CA 94924.

for \$11.00 or 28IRC from Joerg Klingenfuss, Panoramastrasse 81, Hagelloch, D-7400 Tuebingen 7, West Germany.

UT-4 COMPONENT UPDATE. Fifo's all gone. Few UARIS and 1408L-6 D/A left. AZCD resistor packs \$2.00. See Jan. ad Peter Bertelli, W6KS, 5262 Yost Place San Diego, CA 92109. 714-274-7060. INFO-TECH M300, Tri mode keyboard M-200E trimode converter. Like new \$700 UT-4B, Dual crystal clock, power supply, all built-in lettered cabinet. Wired by professional. \$200. Bill Ross W4MSI, 2990 Alton Drive, St. Petersburg Beach, FL 33706. 813-360-8501. MICROLOG COMPUTERIZED RTTY/ASCII/CW send and receive system consists of AKBI keyboard with 1950 character extended buffer memory, AVR-2 video decoder with "split screen editing". Also includes 10" GBC solid state monitor factory installed options include: brag tape interface, built in TU, built in AFSK, speed converter for receive, preprogrammed QBF and RY message. Single or double size readout on video, loop keyer etc. Factory warranty good until July 1980 mint condition. Cost \$1500 will sacrifice for \$980 or best offer. Ed, WA2-ZDM 201-486-3849.

MODEL 28 ASR WITH KEYBOARD Perf and TD \$350. For reperf instead of perf Add \$50. Model 28KSR \$175. For answer back add \$50. For 60-75-100 gearshift add \$100. Model 28 reperf with 60-75-100 gearshift \$150. For keyboard Add \$50. Model 28 reperf with keyboard (no gearshift) \$150. Model 28 LXD stand alone TD \$100. Model 35R0 (ASCII) receive only in 28 cabinet with power supply \$200. All equipment rewired and ready to plug in. FOB Akron, Ohio. Bill Parker, K8NCV 984 Amelia Ave., Akron, Ohio 44302.

HAL OKB-2010 Dual mode keyboard with 128 key buffers, \$300. Microlog AVR-1 \$200. Both mint. W4JMD 919-793-4866

FOR SALE: HAL DS-3000 MODEL -3 Baudot ASCII, Morse. Late serial number, Mint condition. Full documentation \$1,200 or best offer. E. Schlagel, K2AKV suite 901, One Hanson Place, Brooklyn, NY 11243, Weekdays 9-6, 212-638-9540.

WANTED M28 SPROCKET FEED MACHINES. State quantity and condition in first letter. Skip, WB6CYA, 3611 Merrimac Ave. San Diego, CA 92117

MODEL 35 ASR TELETYPE WITH Friction feed, very nice condition \$375. Pick-up only. Eugene Weiner, K0CKX, 511 5th Ave., Coralville, IA 52241. 319-354-4478 RM-300, THE COMPLETE TU AND AFSK Generator on one board. Your CW ID generated from on-board PROM, thinking of VHF RTTY through your local repeater? This premium quality board is ideal. Complete documentations \$2.00 RM-300 board just \$21.25. Complete kit (less PROM) \$71.25. PROM programmed with your call \$7.00. RP-400 power supply (+5v. & -12v and dual loop supply) board only \$21.25. Complete kit with heavy duty transformer and solid state auto start relay \$71.25. Calif. residents add 6%. Postage and handling \$1.00. ECLIPSE COMMUNICATIONS 5 Westwood Dr. San Rafael, CA 94901.

WANTED: MODEL 26 TELETYPE, Working or not (with synchronous motor only). State price and condition. Richard R. Peterson, WA6NUT, 657 Circle Drive, Santa Barbara, CA 93108.

RTTY CLOSEOUT-COMPLETE KITS ONLY!! NS-1A demodulator \$15.00. NS-BP band-pass filter \$9.00 Postpaid. SASE for info. Nat Stinnette Electronics, Tavares, Florida, 32778.

SELL: DIGITECH DT 625R Solid State compact TTY distortion analyser, 375 to 4800 BPS, sync/ASYNCR modes \$225.00 Stelma DAC V data analysis center combination distortion analyser with scope and meter plus test pattern generator, 30 BPS to 9600BPS \$575.00 Fredericks 1202 RA 16 channel VF RTTY demod - +42.5 hz shift for copying commercial and military FDM systems \$200.00 All mint, with manuals. Tunho, Inc. RFD 1 Box 152N, Skillman, NJ 08558. 609-466-0721.

NOW YOU CAN KEEP SENDING RTTY while you CW ID. The MS-738 AFSK tone mixer is the VHF answer. See November 1979 RTTY JOURNAL for full description. Kit \$9.95 plus \$1.00 shipping. DATAPRO ELECTRONICS, 3029 N. Wilshire Ln. Arlington Hts., IL 60004, Visa Accepted.

AUTO-START MESSAGE COUNTER BY J.L.KOFRON,K7GW 2038 Palm #225,Las Vegas, Nevada 89104

To those who have gone to a video terminal, and now have no hard copy on their two meter auto-start net, this circuit may be of interest.

I now have a tape recorder plugged into the "motor" jack (J-7) on the rear of my st-7. When I receive a "mark" signal the auto-start turns on the recorder, and tapes the message for later playback.

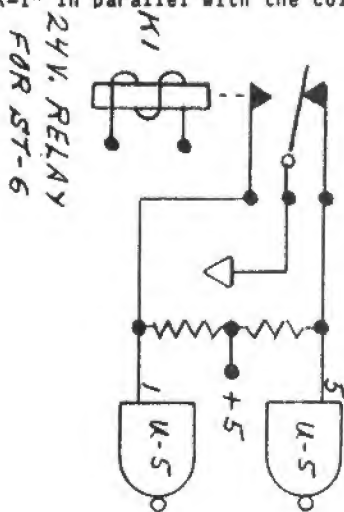
By replacing "S-1" with a 24 volt relay "K-1", and connecting "K-1" in parallel with the coil of the relay

in the HAL ST-1, this counter will now advance one count with every separate transmission received, to a maximum count of ninety-nine.

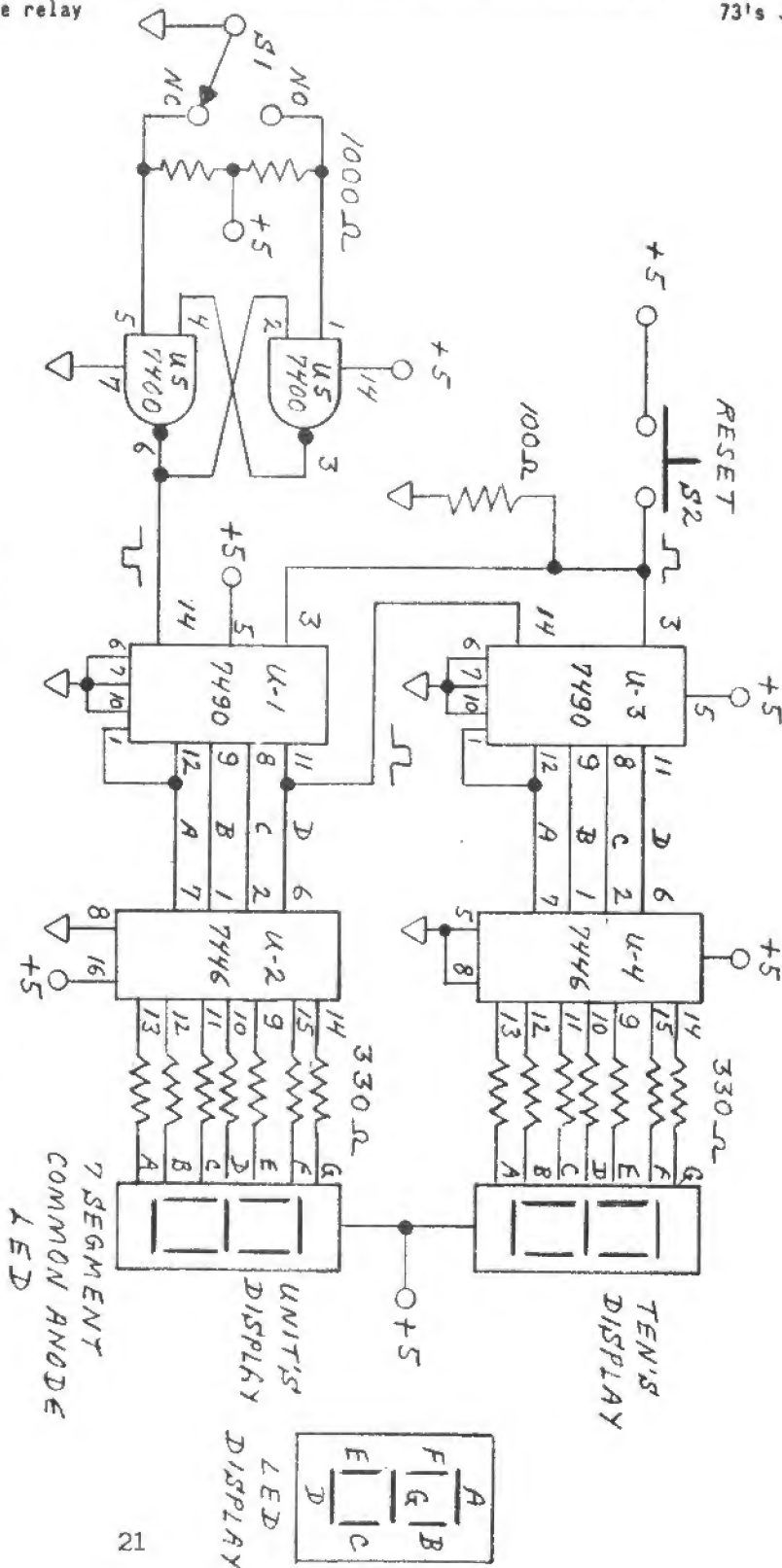
This counter will work with any TU that has a relay in it for auto-start.

To go first class, take a chassis punch and cut a hole between the "limiter" knob and the "normal/reverse" switch, and mount your L.E.D. display there.

73's JOE



WB7NCI + W7DIM/K7GW





BRITISH AMATEUR RADIO TELEPRINTER GROUP



Summary Sheet for _____ Contest 19 _____

☐ Single band ☐ All band ☐ Single operator ☐ Multi operator ☐ S.W.L.

Country _____ Complete number of contest sheets _____

Call _____ Name _____

Address _____

Transmitting equipment _____

Input power _____ Receiver _____

Antennas _____

Multioperator stations show all calls _____

BAND	QSO's	COUNTRIES	COUNTRY TOTAL	POINTS
3.5 Mhz				
7.0 Mhz				
14.0 Mhz				
21.0 Mhz				
28.0 Mhz				
TOTAL			(2)	(1)

DIFFERENT COUNTRIES _____ CONTINENTS _____ (3)

CLAIMED SCORE = (1) _____ x (2) _____ + 200 x (2) _____ x _____ (3)
= _____ POINTS

SUMMARY OF TIME WHEN STATION WAS ON THE AIR

DATE	ON G.M.T.	UNTIL G.M.T.	DATE	ON G.M.T.	UNTIL G.M.T.	DATE	ON G.M.T.	UNTIL G.M.T.

I certify that I have observed fully the rules and regulations for amateur radio in this country and for the present contest.

DOVETRON



MPC-1000C

Multipath Correction
In-Band Diversity &
AFSK Tone Keyer

Amateur Net: \$545.00

Standard features include CONTINUOUSLY tuneable Mark and Space channels (1000 Hz to 3200 Hz), Dual Mode (MARK or FSK) Autostart and internal high level neutral loop keyer (20 to 60 ml). Both EIA and MIL FSK outputs are provided for direct interface to microprocessor and video terminal peripherals.



MPC-1000CR

Signal Regeneration &
Speed Conversion

Amateur Net: \$645.00

A front panel switch permits internal TSR-200 Signal Regenerator-Speed converter assembly to electronically "gear-shift" between 60, 67, 75 and 100 WPM. All incoming and outgoing signals are regenerated to less than 0.5% bias distortion. Also available with DIGITAL Autostart (TSR-200D): Amateur Net: \$695.00



MPC-1000R/- TSR-500

Dual UART Regeneration,
Speed Conversion, 200
Char. Memory, Word Cor-
rection & DIGITAL
Autostart

Amateur Net: \$895.00*

The MPC-1000R/TSR-500 provides Preloading and Recirculation of the 200 character FIFO Memory, a keyboard-controlled Word Correction circuit, Variable Character Rate, Tee Dee Inhibit, Blank/LTRS Diddle, a Triple Tone-Pair AFSK Tone Keyer and a Character Recognition/Speed Determination DIGITAL (DAS-100) Autostart mode.

*The MPC-1000R is also available without a TSR assembly and functions as a MPC-1000C with a Triple Tone-Pair AFSK Tone Keyer. This "Basic-R" permits future expansion with a TSR-100, TSR-200, TSR-200D or TSR-500 by simply lifting the lid and plugging in the appropriate TSR assembly: Amateur Net (Basic-R): \$595.00

Your QSL will bring complete specifications, or call: 213-682-3705.



627 FREMONT AVENUE
(P. O. BOX 267)
SOUTH PASADENA, CA, 91030

MPC-1000R BY DOVETRON

MULTIPATH CORRECTION, IN-BAND DIVERSITY, SIGNAL REGENERATION,
UP-DOWN SPEED CONVERSION, 200 CHARACTER FIFO MEMORY,
KEYBOARD-CONTROLLED WORD CORRECTION & DIGITAL AUTOSTART



THE MPC-1000R REGENERATIVE RTTY TERMINAL UNIT

The DOVETRON MPC-1000R is a complete Transmit-Receive modem designed for optimum radio teleprinter communications on land, sea and in the air.

Standard features include a high level loop supply and keyer (neutral or polar), EIA and MIL FSK outputs, a phase-continuous AFSK Tone Keyer with three selectable Mark - Space - Shift tone pairs, Mark, FSK & Digital Autostart, Automatic Markhold, an internal RY Generator for terminal unit Self-Test and circuit adjustment, and a Signal Loss Alarm circuit.

The MPC Series is available in six different models to meet your exact requirements.

Complete specifications are
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